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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,179	05/03/2002	Mitsumasa Matsushita	216889US	6163
22850	7590	12/16/2003	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.			WYROZEBSKI LEE, KATARZYNA I	
1940 DUKE STREET			ART UNIT	PAPER NUMBER
ALEXANDRIA, VA 22314			1714	

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/009,179

Applicant(s)

MATSUSHITA ET AL.

Examiner

Katarzyna Wyrozebski Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1201. 6) ☐ Other: .

Claim Analysis

The claims of the present invention require that the rubber scrap be subjected to the shear stress. At the same time, the equipment utilized to obtain the devulcanized rubber is an extruder. In view of the above, the prior art at utilizes extruder to devulcanize the rubber it also utilizes shear stress.

Claim Objections

1. Claim 7 is objected to because of the following informalities: In claim 7 the applicants stated that the decomposed product in the reclaimed rubber is reduced to $\frac{1}{2}$ or less relative to that before introduction of the degasification carrier. It is not clear as to what exactly is meant by term "that" and such term is really appropriate in this context. For prompt prosecution of the application, the examiner will treat the claim as the term "that" refers to the amount of the decomposition byproducts produced during devulcanization, however the applicants are urged to make appropriate changes that would clarify claim language.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-5, 7 are rejected under 35 U.S.C. 102(e) as being anticipated by MOURI (US 6,133,413) in view of evidence given in MATSUSHITA (US 6,632,918).

The prior art of MOURI discloses method of devulcanization of waste rubber such as butyl rubber (claim 1).

The waste rubber of MOURI is collected from waste tires, molded products as well as manufacturing scrap.

The rubber of MOURI is crosslinked with sulfur and it is subjected to shear action at 10-150 kg/cm² and temperature of 180-250°C. For butyl rubber the pressure is 10-30 kg/cm² and temperature is 180-250°C (claims).

The prior art of MOURI utilizes extruder as a means for rubber devulcanization and the recycled rubber is mixed with virgin rubber to produce new article.

Although the prior art of MOURI does not specifically disclose the step of removing gases from the reaction media, such step is inherent for following reasons. Devulcanization

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process causes liberation of gaseous byproducts and which in turn will influence the pressure inside the equipment. Fluctuation in pressure will adversely affect recycled rubber, therefore its removal is required. The adverse effects of pressure fluctuation include pulsation, abnormal blowing and blowing back of the rubber. Evidence for examiner's allegations can be found in already patented invention US 6,632,918 to MATSUSHITA col. 4, lines 60-67.

In the light of the above disclosure, the prior art of MOURI anticipates claims rejected above.

4. Claims 1, 3, 4 are rejected under 35 U.S.C. 102(b) as being anticipated by MURYAMA (JP 06-210633).

The prior art of MURYAMA discloses process for recycling waste rubber. The rubber is devulcanized in the extruder and with deodorization equipment that utilizes air to remove gaseous "stinkdump" [term used in JP prior art] produced during devulcanization process [0003].

The temperature at which rubber of MURYAMA is devulcanized is in a range of 180-450°C [0025]. Preferred temperature range is 150-200°C [0050].

In the light of the above disclosure the prior art of MURYAMA anticipates requirements of claims rejected above.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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8. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over MOURI (US 6,113,413) in view of POTTER (JP 10-287765).

The discussion of the disclosure of the prior art of MOURI from paragraph 3 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of MOURI is recitation of a resin.

With respect to the above difference, the prior art of POTTER discloses process for recycling crosslinked rubber, devulcanization is conducted in presence of virgin rubber and uncured polymer for immediate re-use of the reclaimed rubber.

The prior art of POTTER also achieves de-vulcanization of the rubber (or de-cross linking) by subjecting the scrap rubber to shear action in an extruder. Therefore it would have been reasonable to expect that presence of uncured resin or resin cured rubbers in the prior art of MOURI would not adversely affect the recycling process.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize resin cured rubber or obtain new resin cured article in the composition of MOURI and thereby obtain the claimed invention. The same process can be utilized to recycle rubber if rubber is cured with resin or resin is added to re-use.

9. Claims 2, 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over MURYAMA (JP 06-210633) in view of POTTER (JP 10-287765).

The discussion of the disclosure of the prior art of MURYAMA from paragraph 4 of this office action is incorporated here by reference.

The difference between the present invention and the disclosure of the prior art of MURYAMA is recitation of a resin and instant re-use of the reclaimed rubber.

With respect to the above difference, the prior art of POTTER discloses process for recycling crosslinked rubber, devulcanization is conducted in presence of virgin rubber and uncured polymer for immediate re-use of the reclaimed rubber.

The prior art of POTTER also achieves de-vulcanization of the rubber (or de-cross linking) by subjecting the scrap rubber to shear action in an extruder. Therefore it would have been reasonable to expect that presence of uncured resin or resin cured rubbers in the prior art of MOURI would not adversely affect the recycling process. Reusing of the recycled rubber is also considered obvious, since that is expected intended use for recycled polymers

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize resin cured rubber or obtain new resin cured article in the composition of MURYAMA and thereby obtain the claimed invention. The same process can be utilized to recycle rubber if rubber is cured with resin or resin is added to re-use.

The applicants are prompted to insert continuity information at the beginning of the specification of the present invention.

US Patent 6,632,918 is very much applicable against present claims as it teaches subject matter of the present invention. This patent however, does not qualify as a prior art against present claims.


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Beginning December 12, 2003 the new phone number for the examiner of record will be 571-272-1127

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski Lee whose telephone number is (703) 306-5875. The examiner can normally be reached on Mon-Thurs 6:30 AM-4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (703) 306-2777. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Katarzyna Wyrozebski Lee
Primary Examiner
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December 4, 2003